

REMARKS

Claims 1-22 are presently pending. In the above-identified Office Action, Claims 3, 5, 6, and 16-20 were withdrawn from consideration despite having been previously withdrawn in Applicant's Amendment B (see second sentence in the Remarks section of Amendment B mailed 2-14-04), which was considered non responsive for supposed failure to withdraw the claims. Claims 1, 2, 4, 7-15, 21 and 22 were rejected. Claims 10, 13, and 15 were rejected under 35 USC 112, first paragraph, as failing to comply with the enablement requirement, since they purportedly contain subject mater not sufficiently described in the Specification. Claims 1,2, 4, 7-11, 13, and 15 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to distinctly claim the subject mater which applicant regards as the invention. Claims 1, 2, 8, and 12 were rejected under 35 U.S.C 103(a) as being unpatentable over Lowry in view of Fawcett et al. (herein after Fawcett) and Christensen et al. (herein after Christensen). Claims 4 and 7 were rejected under 35 USC 103(a) as being unpatentable over Lowry in view of Fawcett and Christensen as applied to Claim 1 and further in view of Priest. Claims 9 and 10 were rejected under 35 USC 103(a) as being unpatentable over Lowry in view of Fawcett and Christensen as applied to Claim 9 and further in view of Arntz. Note that Claim 11 was not rejected in view of Lowry. Claim 13 was rejected under 35 USC 103(a) as being unpatentable over Lowry in view of Fawcett and Christensen as applied to Claim 12 and further in view of Liaw. Claim 14 was rejected under 35 USC 103(a) as being unpatentable over Lowry in view of Miller, Fawcett, and Christensen. Claim 15 was rejected under 35 USC 103(a) as being unpatentable over Lowry in view of Fawcett, Christensen, Arntz, and Liaw. Claim 21 was rejected under 35 USC 103(a) as being unpatentable over Lowry in view of Miller. Note that Claim 22 was not rejected in view of Lowry. The above rejections under 103(a) are based on Lowry, which should be obviated by Applicant's Affidavit under Rule 131 as discussed more fully below.

Claims 1, 2, 4-8 (however Claims 5 and 6 were previously withdrawn), 12, and 21 were further rejected under the judicially created doctrine of obviousness-type double

patenting as being unpatentable over Claims 1-3 of U.S. Patent No. 6,368,497 in view of Fawcett and Christensen. Claims 9 and 10 were further rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-3 of U.S. Patent No. 6,368,497 in view of Fawcett and Christensen as applied to Claim 9 and further in view of Arntz. Claim 11 was rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-3 of U.S. Patent No. 6,368,497 in view of Fawcett and Christensen as applied to Claim 1 and further in view of Liaw. Claim 13 was further rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-3 of U.S. Patent No. 6,368,497 in view of Fawcett, Christensen, and Liaw. Claim 14 was further rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-3 of U.S. Patent No. 6,368,497 in view of Miller, Fawcett, and Christensen. Claim 15 was further rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-3 of U.S. Patent No. 6,368,497 in view of Lowry, Fawcett, Christensen, Arntz, and Liaw. Claim 22 was rejected solely under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 1 of U.S. Patent No. 6,368,497.

Each of the above rejections are based on Christensen. However, Christensen should be obviated as a reference for the reasons set forth below. Accordingly, the currently rejected claims should be allowable, since both Lowry and Christensen should no longer be applied as references to reject the Claims as discussed more fully below.

By this Amendment, Applicant has cured objections to the present Application. Reconsideration and passage to issue are respectfully requested.

OBJECTIONS TO PREVIOUS AMENDMENT C

The disclosure was objected to based on informality. By this Amendment, Applicant corrected this informality by replacing the term "second means second means" with --second means--.

Amendment C, mailed June 11, 2004, was objected to under 35 USC 132 for introducing new matter. In particular, the fourth full paragraph of the amendment to page 27 of the Specification, the seventh full paragraph, and the eighth full paragraph were objected to as introducing the following concepts: holes forming means for squirting; cavitation jets forming means for expanding; and holes forming second means for facilitating, respectively. By this Amendment D, Applicant has edited the paragraphs that were objected to as required by the present Office Action. However, Applicant particularly objects to the required edits to the seventh full paragraph of the amendment to page 27. These edits were required by Examiner based on the erroneous assumption that the concept of cavitation jets forming the “means for expanding” is new matter. The Detailed Description exhibits clear language indicating that the cavitation jets act as a means for expanding surface area. For example, see the sentences beginning on page 27, line 8, which read:

“As oil shoots from the cavitation perforations 236 into an evaporation chamber formed by the wall 230, certain liquid contaminants boil and vaporize, facilitating their removal from the oil. Furthermore, as oil splashes inside the evaporation chamber, the individual oil droplets and liquid contaminant droplets provide additional evaporation surface area.” (emphasis added)

Hence, while the language in question was deleted by this Amendment, Applicant maintains that the paragraphs added by Amendment C should not have been initially required. The Detailed Description supports the claims with or without the amendments provided in Amendment C.

REJECTIONS UNDER 35 USC 112

Claims 10, 13, and 15 were rejected under 35 USC 112, first paragraph, as failing to comply with the enablement requirement, since they purportedly contain subject matter not sufficiently described in the Specification. In particular, Examiner suggests that the Specification fails to disclose how to form the recited electromagnet since no pole piece or magnet induction member for collecting and concentrating the lines of magnetic force has been disclosed in the specification. However, in previous Amendment C, Applicant clearly explained how and why no pole piece or magnet induction member is required other than that which is shown in the Detailed Description. Examiner did not respond to Applicant's explanation/argument. Applicant should be afforded an adequate response, or the claims should be allowed. In summary, Amendment C explained how the Detailed Description clearly discloses a coil wrapped around a tube. This configuration has been proven countless times throughout history to work as an electromagnet magnet / electric solenoid in response to electric current travelling in the coil. It is well known in the art that a center pole piece is not required to form an electromagnetic field sufficient to actuate or move ferroelectric metallic particles. This is further supported by the fact that Liaw (U.S. Patent No. 4,218,320) does not disclose use of an additional pole piece. Note that the hollow metal column 32 surrounded by paper 30, 31 as disclosed in Liaw would not be any more efficient at collecting particles than the evaporation chamber disclosed in the present Application, which is also surrounded by a coil. Note that Applicant has a degree in electrical engineering from UCLA.

Claims 1,2, 4, 7-11, 13, and 15 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to distinctly claim the subject matter which Applicant regards as the invention. In particular, with respect to Claim 1, Examiner suggests that it is unclear as to whether *fluid* or *oil* is being claimed. By this Amendment, Applicant has replaced the term *oil* with the term *fluid* in Claim 1 and associated dependent Claim 7. This should obviate 35 USC 112 rejections for Claims 1-11.

Regarding Claims 10, 13, and 15, Examiner suggests that a coil alone cannot function to actuate metallic particles, since no pole piece or magnet induction member for collecting and concentrating the lines of magnetic force to enable particle collection

has been disclosed. However, as stated above and in Amendment C, no pole piece is required. Those skilled in the art will appreciate that surfaces of the evaporation chamber are sufficient to catch ferroelectric particles in the oil when they are actuated in response to the magnetic field created by the solenoid formed by the coil surrounding the evaporation chamber.

LOWRY SHOULD BE REMOVED AS A REFERENCE

Examiner rejected Applicant's original Affidavit under Rule 131 to swear back of Lowry, suggesting that the Affidavit fails to include evidence showing an actual reduction to practice of the invention prior to the filing date of Lowry or due diligence between the date of conception of the invention and the date of reduction to practice. Applicant has provided some additional exhibits, including additional photos corroborating other statements in the Affidavit.

Note that in view of 715.07 I, paragraph 1, priority may be shown by any satisfactory evidence of the facts and that in view of 715.07 I, (F), allegations of fact may be supported by submitting as evidence supporting statements by witnesses. Furthermore, allegations of fact may be supported by submitting as evidence attached sketches. In addition, 715.07 III (see bottom of second to last paragraph before 715.07(a)) specifically states that "Averments made in a 37 CFR 1.131 affidavit or declaration do not require corroboration; an applicant may stand on his or her own affidavit or declaration if he or she so elects. (ex parte Hook, 102 USPQ 130 (Bd. App. 1953))." Hence, Applicant's affidavit, which complies with MPEP 715.07, should be sufficient to overcome Lowry. Furthermore, note that the matter of dates can be taken care of in the body of the oath or declaration (715.07 II, paragraph 1).

Hence, the evidence provided in Exhibits A-E, which provide testimony and sketches, should be effective to overcome the Lowry reference by establishing that Applicant was diligent between the date of conception of the invention, which was before the filing date of Lowry, and the date of reduction to practice, either actual or constructive.

CHRISTENSEN SHOULD BE REMOVED AS A REFERENCE

Virtually all of the claims were rejected in view of Lowry and/or Christensen. However, Christensen should also be removed as a reference. The device of Christensen is different in function, operation, and intent and addresses a different problem than that solved by the present invention, and hence should not be used as a reference (see *In re Wright*, 6 USPQ 2d 1959(1988)). Christensen discloses a mass transfer device. Such mass transfer devices are typically employed as condensers in refrigerators, which represent non-analogous art. Note that any invention that involves actuation of movement of mass, including circuits that employ the movement of electrons, may be considered "mass transfer devices." A device being classified as a mass transfer device does not necessitate that it represents analogous art.

FAWCETT SHOULD BE REMOVED AS A REFERENCE

Like Christensen, the device of Fawcett, which discloses a distillation system, is different in function and operation, and hence should not be used as a reference. Examiner suggests that Fawcett discloses the treatment of oil. However, Fawcett vaporizes the fish oil and then condenses the resulting vapor to obtain purified fish oil. Applicant's invention in no way intends to vaporize oil.

Examiner employs Fawcett to reject claims having limitations directed to use of capillary channels. However, Fawcett does not disclose capillary channels. Examiner suggests that the capillary channels of Fawcett redistribute distilland film in such a way as to break up surface layers of partially evaporated liquid. However, see col. 2 of page 1, lines 6-10 of Fawcett, wherein the so-called capillary channels are called devices and not capillary channels. Later in Fawcett, these devices are purportedly called an edge, baffle plate, and a trough (see paragraph beginning on col. 1 of page 2, line 25) which correspond to the edge 4, baffle plate 5, and trough 3 as shown in Fig. 3 of Fawcett. To assume the devices 3, 4, or 5 of Fawcett constitute capillary channels that function as

presently claimed would require a guess that is neither supported by the figures nor the written text of Fawcett. Fawcett does not teach, disclose, or suggest use of capillary action to distribute fluid about an evaporative surface to facilitate removal of volatile contaminants. At most, Fawcett discloses edges and baffle plates employed to facilitate vacuum distillation.

REJECTIONS BASED ON LIAW UNDER 35 USC 103(a)

Examiner suggests that the surface of Liaw as disclosed in Fig. 3 of Liaw is, which is surrounded by an electromagnetic coil, is analogous to the evaporation surface of the present invention. However, the surface of Liaw is not an evaporation surface, and consequently, it is not analogous to the evaporative surface of the present invention. Consequently, it would be unobvious to one skilled in the art to combine the teachings of Liaw to teach use of a combination heater and electromagnet disposed about an evaporation surface as presently claimed. Such a combination produces significant unexpected and unobvious results that are sufficient to prove that the combination is unobvious in light of the references as discussed more fully below.

Examiner employs Liaw to reject Claims to reject Claims 11, 13, and 15, suggesting the Liaw discloses an oil filter equipped with an electromagnetic coil 20 disposed about an analogous chamber (see Fig. 3 of Liaw) that enables fine ferromagnetic particles to be removed from the fluid and also is capable of acting as a heater.

However, Liaw does not teach, disclose, nor suggest use of the coil as a heater and an electromagnet. A mere electromagnet will not act as a heater sufficient to facilitate removal of volatile contaminants from a fluid (see Claim 11). The coil must have a sufficient resistance and current to result in sufficient heat, which is a function of the square of the current multiplied by the resistance (see paragraph beginning on page 24, line 8). Liaw does teach that a resistive coil would be advantageous, rather, since resistance in the coil that is required to produce heat will reduce the current in the coil, resulting in reduced magnetism. It would be unobvious at the time of Liaw to increase

the resistance of the coil to provide a heating effect, since this would reduce its magnetic capabilities. Generally, electromagnets are manufactured with wires that have minimum resistance (R) to maximize the magnetic field (\mathbf{B}), which is approximately $\mathbf{B} = \mu_o(v/R)n$, where v is the voltage drop across the coil, n is the number of turns in the coil, and μ_o is the permeability constant. Accordingly, it would be counter-intuitive, i.e., unobvious to one skilled in the art to increase the resistance of a coil to provide effective heating of an evaporation surface and to remove metallic contaminants from a fluid. Even if the electromagnetic coil of Liaw did provide heating, it would be useless in Liaw's device, since Liaw does not disclose an evaporation surface. Accordingly, it would be unobvious to one skilled in the art to modify Liaw to teach the invention as Claimed.

Liaw does not teach, disclose, nor suggest use of an electromagnetic coil employed in combination with an evaporative surface, and consequently, should not be employed to reject Applicant's Claims. Furthermore, Liaw teaches away from employing a magnet in the position suggested by Applicant (about an evaporation chamber at the second pressure), suggesting that particles would be peeled off in masses by oil current if the magnet is positioned after the filter (see column 1, lines 30-35).

Applicant's efficient capillary channels, which catch such particles, prevent them from being peeled off by oil flow rate. Furthermore, since the magnetic field would be distributed about the evaporation chamber, any peeled off particles would be caught as they flowed down the walls of the surface.

If it were obvious to employ a coil that acts as both an electromagnetic and a heater element, then surely it would be anticipated in the art of record. Since this dual-use of a coil is neither taught, disclosed, nor suggested by the art of record, its use in a fluid cleaning device as recited in Applicant's claims is unobvious.

GENERAL THEMES EMPLOYED TO REJECT CLAIMS

- Cited art purportedly teaches squirting of oil to remove volatile contaminants.

In fact, the references teach away from squirting or spraying to increase evaporative surface area in favor of slow flow rates of 5-6 gallons per hour (see col. 2, line 19 of Arntz). Lowry attempts to minimize flow rate to promote a thin film (see col. 3, lines 1-2) such a minimal flow rate teaches away from use of squirting or cavitation to remove volatile contaminants from oil, since slowly flowing oil is unlikely to squirt, let alone cavitate.

Claim 22 was rejected solely under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 1 of U.S. Patent No. 6,368,497, since Claim 1 purportedly discloses or suggests the squirting of oil. However, neither Claim 1 of U.S. Patent No. 6,368,497 nor U.S. Patent No. 6,368,497 in its entirety teaches, discloses, or suggests squirting of oil as recited in Claim 22. As the inventor and author of U.S. Patent No. 6,368,497, Applicant maintains that said Patent does not teach, disclose, or suggest use of squirting oil in an evaporation chamber to facilitate removal of volatile contaminants from oil. Consequently, said Patent should not be used to reject Claim 22. Any squirting in the chamber would be accidental. It would be unobvious to purposefully squirt oil in an evaporation chamber in light of the current thinking in the art at the time that said Patent was written. The current thinking was that slow flow rates, which would typically preclude squirting, are desired in an evaporation chamber, such as to promote the creation of a thin film on the evaporation surface. For additional examples discussing thin films and/or slow flow rates, see col. 3, lines 41-43 and lines 63-67 of Miller; col. 5, lines 7-10 and col. 7, lines 3-5 of Lowry, and col. 2, lines 17-20 of Arntz. Note that use of fine oil droplets resulting from squirting or spraying oil may produce evaporation surfaces (including the surfaces of droplets) orders of magnitude larger than those resulting from the creation of thin films. These significant results represent a significant expansion in evaporation surface area. Consequently, in light of these advantages, the present invention is not obvious in view of the references cited.

- Cited art purportedly teaches cavitation of fluid, such as oil, to remove volatile contaminants.

Oil is unlikely to squirt or cavitate via perforations not specifically designed for cavitation or squirting. Squirting or cavitation and is particularly unlikely in embodiments designed for minimal flow rates, i.e., flow velocities. Furthermore, even if cavitation did occur, such a result would be accidental and not intended, since the art of record is void of any suggestion to employ cavitation to facilitate the removal of volatile contaminants from fluid. Accordingly, various cited references should not be employed to reject Applicant's claims directed toward use of cavitation to facilitate removal of volatile contaminants from a fluid.

Those skilled in the art will appreciate that specific design criteria must be met to enable cavitation. Simply disclosing use of a hole through which fluid can pass is insufficient to teach, disclose, or suggest the use of cavitation perforations to cause contaminants to cavitate. Cavitation yields significant and unexpected results. Namely, cavitation results in the formation of many small vapor bubbles in the fluid, since the fluid actually boils. These vapor bubbles will contain volatile contaminants, which are boiled off in the chamber at less than the boiling point of the fluid. See paragraph beginning page 26, line of the present Specification, which describes cavitation in more detail. If Lowry or Fawcett et al. were aware of use of cavitation perforations, then surely they would have disclosed use of cavitation due to the significant advantages achieved thereby. As a further reference, see the book entitled, FUNDAMENTALS OF FLUID MECHANICS, by Bruce R. Minson, Donald F. Young, and Theodore H. Okiishi, and published by John Wiley & Sons, Inc. 1994, ISBN 0-471-57958-0.

Claim 15 was further rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-3 of U.S. Patent No. 6,368,497 in view of Lowry, Fawcett, Christensen, Arntz, and Liaw. Examiner suggests that the jets 60 of Arntz are capable of causing cavitation. However, these jets are not designed to cause cavitation. Arntz neither teaches, discloses, nor suggests use of cavitation jets. Arntz teaches use of slow flow rates, such as 5-6 gallons per hour (see col. 2, line 19) which would be incapable of cavitating oil via the large-circumference

holes 60 (see Fig. 1 of Arntz) of Arntz. Rather, oil would slowly seep through the holes 60, which are neither designed as nor called jets.

OBJECTION TO WITHDRAW OF CLAIMS 3,5,6, AND 16-20 FROM PROSECUTION

In the above-identified Office Action, Examiner suggests that Claims 3,5,6, and 16-20 should remain withdrawn.

Examiner suggests that regarding Claim 3, “parallel or cylindrical walls” are not shown. However, parallel or cylindrical walls are shown in every embodiment of the invention. The mere contouring or texturing of walls does not necessitate that the walls are not cylindrical or parallel. The walls disclosed in the elected embodiment of Fig. 3, for example, are clearly cylindrical (defined as “Like a cylinder.” by www.webster.com) walls that support inner threaded or contoured surfaces. If Examiner assumes that the contour of the inner surface of the walls comprising the evaporation chamber is not cylindrical, then clearly the outer surfaces of the walls are shaped like a cylindrical and should be considered cylindrical. Hence the walls are cylindrical, since a defining outside surface is cylindrical. Note that a solid tube is also considered cylindrical according to widely established definitions of the term cylindrical. Similarly, if the evaporation surface 30 of Fig. 3 were replaced with the contoured evaporation surface 230 of Fig. 10, the resulting embodiment would still disclose cylindrical or parallel walls. Webster (www.webster.com) defines parallel as “Everywhere equidistant.” Corresponding opposing portions of the surfaces of the evaporation surfaces of Figs. 3 and 10 are everywhere equidistant from each other and hence parallel. Note that even a rectangular tube is considered a cylinder according to www.webster.com and www.dictionary.com, which define a cylindrical mathematically. In the case of a rectangular tube, the directrix would be a square.

Regarding Claim 5, Examiner suggests that polygonal perforations disclosed to be outside of the channels are not shown in Fig. 10. However, those skilled in the art will appreciate that the polygonal cross-sections as disclosed are intended to reduce beading and are applicable to any perforation on any surface disclosed in the Application.

Regarding Claim 6, Examiner suggests that the term “lacks a built-in heater” is not shown in Figs. 3 or 10 of the elected embodiments. However, those skilled in the art will appreciate that the coil 90 need not be operated as a heater. For example, see the sentence beginning on page 27, line 15, which states

“The resistance of the coil 90 may be tuned to achieve a desired temperature on the surface 238, which is conducive to the efficient removal of liquid and gaseous contaminants.”

Consequently, the resistance of the coil 90 may be minimized to prevent heating and would thereby lack a built-in heater.

Regarding Claim 16, Examiner suggests that “base plate” corresponds to Figs. 4 and 5 and not Fig. 3. This is incorrect. Fig. 3 clearly discloses a base 60. The base 60 is clearly a plate, and hence, is a base plate. A plate is widely known in the art as a substantially flat piece of material, such as metal, that forms part of a machine (see www.dictionary.com).

Since Claims 17, 18, and 20, which depend from Claim 16, were withdrawn for similar reasons as Claim 16, these claims should now be considered. Furthermore, the finality of the present Office Action should be lifted.

Regarding Claim 19, Examiner suggests that Claim 19, which recites use of a concentric space defined by an output surface of a filter, reads upon Fig. 6 and not Fig. 3. However, the shape of the evaporation chamber of Fig. 3 is clearly defined by or formed by the inner output surface of the accompanying filter. Hence, Claim 19 should not be withdrawn, as it is intended to include the embodiment of Fig. 3. At most, the wording of Claim 19 could be slightly modified to address any of Examiner’s concerns, but the claim should not be removed from prosecution.

RESPONSES TO EXAMINER'S COUNTER ARGUMENTS

Rejections in view of Lowry should be obviated in view of the accompanying Affidavit under Rule 131. In the event that the Affidavit is not accepted, Lowry should remain ineffective as a reference to reject Applicant's claims.

For example, Examiner suggests that Applicant's arguments concluding that Lowry fails to disclose a means for squirting as recited in Claims 8 and 22 is ineffective since Applicant has defined the means as corresponding to a hole in the fourth paragraph of the amendment to page 27 of the Specification. Examiner suggests that since a hole is disclosed in Lowry, this hole is sufficient to reject Applicant's claims. However, as amended, the fourth paragraph of the amendment defines the means as corresponding to a cavitation jet. The art of record does not teach, disclose, or suggest use of special cavitation jets. Hence, Applicant's arguments against use of Lowry should remain valid.

Regarding rejections in view of Fawcett and Christensen, Examiner maintains that Applicant insufficiently argues that the references are non-analogous art, since they all include evaporation surfaces for use in mass transfer devices. However, as discussed above, the mere inclusion of an evaporation surface, which serves a different function and purpose than that of the present invention does not imply that Christensen is analogous art.

Regarding rejections in view of Arntz, Examiner maintains that Applicant insufficiently argues that Arntz fails to disclose jets capable of causing cavitation as recited in Claims 10 and 15. Examiner suggests that Arntz discloses jets that are capable of causing cavitation at high flow rates since they include holes 60 having funnel portions that are identical to those disclosed by Applicant. However, note that the holes 60 are not identical to those disclosed by Applicant, since they are not designed and dimensioned in accordance with the Continuity equation and Bernoulli's equation. Note that the Fig. 10 of the present Application is not necessarily drawn to scale. The conclusion that the holes are identical based on viewing the figures is inappropriate. Furthermore, note that holes 60 of Arntz would not be configured to cause cavitation or squirting, since this would result in loss of oil through the open vent 40. Furthermore,

Arntz teaches use of slow flow rates, such as 5-6 gallons per hour (see col. 2, line 19 of Arntz), to create a thin film, which would be contrary to the high flow rates that Examiner suggests would be required to produce cavitation. Furthermore, the mere disclosure of a hole is insufficient to teach, disclose, or suggest use of cavitation to remove volatile contaminants from a fluid.

Regarding rejections based on 6,368,497. Examiner acknowledges that 6,368,497 does not disclose capillary channels but suggests that Fawcett clearly discloses these channels. However, Fawcett does not disclose capillary channels as discussed above.

Regarding combinations of 6,368,497 with Fawcett and Christensen, Examiner suggests that Applicant implies that the references should not be combined since they fail to disclose the treatment of oil. However, as noted above Fawcett does not disclose capillary channels as suggested by Examiner, and Fawcett is a distillation system, which is different in both function and operation than the oil recycling system of the present invention. Hence Fawcett should not be employed as a reference to reject the claims.

Regarding rejections based on Liaw, Examiner maintains that use of Liaw is proper, since the various systems disclose filters with pervious center tubes. However, the center tube of Liaw is different in function and operation, since it is not an evaporation surface. Furthermore, Liaw lacks suggestions as to any advantages to be obtained by combining Liaw with other art of record. To employ references to reject the claims, the references themselves should suggest an advantage to be obtained through their combination. Hence, the suggestion to combine should come from the references themselves and not the Examiner as discussed more fully below (see **In re Sernaker**, 217 U.S.P.Q. 1, 6 (CAFC 1983)).

UNSUGGESTED COMBINATION OF REFERENCES

The references cited do not suggest, expressly or implied, that they be combined to teach the invention as claimed. Hence, they should not be combined to reject Applicant's Claims as maintained by **In re Wright**, 6 USPQ 2d 1959 (1988).

Furthermore, strained interpretations were relied upon to combine the references to reject the claims.

In the above-identified Office Action, the suggestion to combine features from the various references to show the present invention has not come from the prior art references themselves. Prior art references themselves should suggest that they be combined for rejection of claims under 35 USC 103, which was forcefully stated, for example, in *In re Sernaker*, 217 U.S.P.Q. 1, 6 (CAFC 1983):

"[P]rior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings."

Nothing in the prior art references suggests any advantage to be obtained from their combination, nor do they suggest any advantages due to cavitating contaminants or due to squirting fluid to remove volatile contaminants as claimed in Applicant's Claims. The suggested combination of references cited by Examiner required hindsight.

In *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959), the court reversed a rejection based on a combination of references, holding that the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 123 USPQ at 352.). Similarly, for the cited combination of references to be combined in the manner suggested to disclose the invention as claimed, would require substantial unobvious reconstruction and re-design of constituent elements. In addition, if the references cited were simply combined without significant modification, the resulting combination would not teach, disclose or suggest the invention as claimed and would reflect a change in basic principles under which the invention as claimed is designed to operate.

A combination of the references would teach at most a fluid cleaning system having an evaporation surface and an electromagnet coil surrounding the exterior of a

device having an evaporation chamber. Neither squirting to remove volatile contaminants, capillary channels to remove volatile contaminants, nor a combination heater and electromagnetic coil in communication with an evaporation chamber are taught, disclosed, or suggested by the references. Furthermore, the references taken alone or in combination would not reflect the overall principles of maximizing contaminant evaporation surface area and effectiveness by employing such mechanisms.

LONG-FELT BUT UNSOLVED NEED

A long felt but unsolved need remains for a compact and maximally efficient oil recycling unit that is readily installed on modern automobiles. Previous devices have failed to gain widespread acceptance partially due to bulkiness. The requisite device size can be dramatically reduced by employing efficient mechanisms as claimed, including cavitation, squirting, and capillary-action dispersion mechanisms.

LACK OF IMPLEMENTATION

The invention has not previously been implemented. Considering the extraordinary advantages (for example, significantly reduced device size) afforded by the present invention and the fact that it has not yet been implemented suggest that the invention is not obvious.

SYNERGISM

The whole is greater than the sum of the parts; the invention exhibits synergy. For example, the resistive heating employed by the coil of the present invention is synergistic with its contaminant-removing electromagnetic properties. This combination obviates the need for two separate devices, one to heat the fluid and another to extract metallic particles via a magnet. The omission of requisite elements in the art of record

(for example, Lowry would require two separate elements) is further evidence of unobviousness.

UNEXPECTED RESULTS AND SIGNIFICANT ADVANTAGES

In **In re Wiechert**, 370 F.2d 927, 152 USPQ 247 (CCPA 1967) a significant improvement over the related art was held sufficient to rebut prima facie obviousness based on close structural similarity. Similarly, in **In re Waymouth**, 499 F.2d 1273, 182 USPQ 290, 293 (CCPA 1974), the court held that unexpected results for a claimed range as compared with the range disclosed in the art of record had been shown by a demonstration of "a marked improvement, over the results achieved under other ratios, as to be classified as a difference in kind, rather than one of degree." The present invention provides a marked improvement over the references cited or combinations thereof, as discussed more fully below.

Evidence of unexpected properties may be in the form of a direct or indirect comparison of the claimed invention with the closest prior art (see **In re Boesch**, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP 716.02(d) - 716.02(e)). Hence, Applicant's following comparisons of the present invention with the art of record should be sufficient to establish unexpected properties.

None of the art of record discloses a contaminant-removal system that can be efficiently installed at an angle. This is a significant advantage. Use of an oil cleaning system installed at an angle is particularly advantageous when the devices must be installed on modern automobiles with minimal space. Enabling installation at an angled or horizontal position represents a significant beneficial result, especially considering that a primary factor inhibiting installation of oil recycling units on modern automobiles is the lack of available space in engine compartments of modern automobiles. This lack of space is a well known problem in the art as is corroborated by Arntz for example (see col. 1, line 38 of Arntz and sentence beginning on col. 1, line 45 of Arntz). By enabling horizontal installation, various automobiles that previously lacked the requisite space can now accommodate oil recycling systems. If it were obvious to employ the capillary

channels or the squirting of oil as disclosed and claimed, then surely an oil reclamation device exhibiting an evaporative surface with capillary channels therein and squirting systems would be taught and shown in the art.

Furthermore, as discussed above, none of the references disclose mechanisms for implementing cavitation contaminants or squirting to maximize contaminant removal, which could exponentially increase evaporation efficiency and effectiveness, significantly reducing the requisite size of the evaporation chamber and accompanying device. Applicant asserts that experimental evidence is not required to conclude that such results are afforded by such mechanisms, which are claimed by Applicant.

REQUEST FOR ASSISTANCE PURSUANT TO MPEP 707.07(J)

Since the claims define novel structure that produces new, unexpected, not suggested, and unanticipated results as described above, Applicant submits that such claims are clearly patentable. Therefore, it is submitted that patentable subject matter is present. If Examiner agrees that Applicant has presented patentable material but does not feel that the present claims are technically adequate, Applicant respectfully requests that Examiner write acceptable claims pursuant to MPEP 707.07(j).

CONCLUSION

None of the references taken alone or in combination, teaches, discloses, or suggests the invention as presently claimed. For example, none of the references teach squirting of oil or the use of capillary channels to facilitate evaporation of contaminants from a fluid. If it were obvious to employ spiral capillary channels or squirting techniques in an oil recycling system, then surely it would have been implemented and shown in prior art due to the significant advantages afforded thereby.

An updated Affidavit under Rule 131 is also being submitted with the current filing along with a request to remove the finality of the present Office Action.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 19, 2005.

Respectfully submitted,

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